

ABSTRACT OF THE DISCLOSURE

Disclosed is a wavelength division multiplexed passive optical network (WDM PON) system including a central office, a remote Node, and an optical fiber coupled between the central office and the remote node, wherein the central office includes an optical power splitter coupled to the optical fiber, wherein the optical power splitter (1) divides an upstream optical signal from the optical fiber into a plurality of upstream optical signals having substantially similar power and (2) outputs downstream optical signals to the optical fiber, and a plurality of optical transceiver modules to (1) receive the plurality of upstream optical signals, and (2) output the downstream optical signals to the optical power splitter, and wherein at least one of the optical transceiver modules having an optical transmitter including a semiconductor optical amplifier and a reflection-type optical fiber grating located at a predetermined distance from the semiconductor optical amplifier, the optical transmitter transmitting light of a pre-set wavelength resonating between the SOA and reflection-type optical fiber grating; and wherein at least one of the optical transceiver modules having an optical receiver having an optical fiber grating for transmitting light of a predetermined wavelength and an optical detector for detecting light passing through the optical fiber grating.